

## &lt;!--StartFragment--&gt;RESULT 1

ABR55370

ID ABR55370 standard; peptide; 58 AA.

XX

AC ABR55370;

XX

DT 29-JUL-2003 (first entry)

XX

DE Amino acid sequence of dortoxin.

XX

KW Scorpion; birtoxin; venom; blood brain barrier; ion channel;

KW kinin receptor; insecticide; pesticide; dortoxin.

XX

OS Parabuthus transvaalicus.

XX

PN WO2003028666-A2.

XX

PD 10-APR-2003.

XX

PF 04-OCT-2002; 2002WO-US031861.

XX

PR 04-OCT-2001; 2001US-0327602P.

PR 28-JUN-2002; 2002US-0393070P.

XX

PA (REGC ) UNIV CALIFORNIA.

XX

PI Hammock BD, Inceoglu B;

XX

DR WPI; 2003-441071/41.

XX

PT Novel scorpion birtoxin family polypeptide derived from venom of

PT Parabuthus transvaalicus, useful for producing a composition for treating

PT diseases or conditions associated with ion channel function or kinin

PT activity.

XX

PS Claim 6; Page 74; 104pp; English.

XX

CC The specification describes a scorpion birtoxin family polypeptide,  
 CC derived from the venom of Parabuthus transvaalicus, separated from its  
 CC natural milieu. The polypeptide is a modulator of the permeability of the  
 CC blood brain barrier. The polypeptide also has an an ion channel binding  
 CC activity of a birtoxin family polypeptide and kinin receptor activity.  
 CC The peptide is useful for modulating the permeability of the blood brain  
 CC barrier. It is also useful for producing pharmaceutical compositions  
 CC which are useful for treating diseases and conditions associated with the  
 CC ion channel function or kinin activity. Antibodies generated using the  
 CC polypeptide are useful for detecting the presence of scorpion venom toxin  
 CC and in altering birtoxin family polypeptide-ion channel binding or kinin  
 CC activity. Antivenom comprising these antibodies is useful as an  
 CC insecticide or pesticide. The present sequence represents dortoxin of  
 CC Parabuthus transvaalicus, a polypeptide of the invention

XX

SQ Sequence 58 AA;

Query Match 66.6%; Score 228.5; DB 6; Length 58;

Best Local Similarity 66.1%; Pred. No. 3.1e-19;

Matches 37; Conservative 7; Mismatches 11; Indels 1; Gaps 1;

Qy 1 ADVPGNYPLDSSDNTYLCAPLGDNPDCIKICQKHGVDYGYCYAFQCWC-EFLKDEN 55

||||| ||| | ||:| || |:| ||| |||||:|||| |:| ::

Db 1 ADVPGNYPLDKDGNTRYTCLKLGENDKDCQKVCKLHGVDYGYCYAFECWCKEYLDDKD 56

## RESULT 2

ABR55371

ID ABR55371 standard; peptide; 58 AA.

XX

AC ABR55371;

XX

DT 29-JUL-2003 (first entry)

XX

DE Amino acid sequence of bestoxin.

XX

KW Scorpion; birtoxin; venom; blood brain barrier; ion channel;

KW kinin receptor; insecticide; pesticide; bestoxin.

XX

OS Parabuthus transvaalicus.  
 XX  
 PN WO2003028666-A2.  
 XX  
 PD 10-APR-2003.  
 XX  
 PF 04-OCT-2002; 2002WO-US031861.  
 XX  
 PR 04-OCT-2001; 2001US-0327602P.  
 PR 28-JUN-2002; 2002US-0393070P.  
 XX  
 PA (REGC ) UNIV CALIFORNIA.  
 XX  
 PI Hammock BD, Inceoglu B;  
 XX  
 DR WPI; 2003-441071/41.  
 XX  
 PT Novel scorpion birtoxin family polypeptide derived from venom of  
 PT Parabuthus transvaalicus, useful for producing a composition for treating  
 PT diseases or conditions associated with ion channel function or kinin  
 PT activity.  
 XX  
 PS Claim 6; Page 75; 104pp; English.  
 XX  
 CC The specification describes a scorpion birtoxin family polypeptide,  
 CC derived from the venom of Parabuthus transvaalicus, separated from its  
 CC natural milieu. The polypeptide is a modulator of the permeability of the  
 CC blood brain barrier. The polypeptide also has an an ion channel binding  
 CC activity of a birtoxin family polypeptide and kinin receptor activity.  
 CC The peptide is useful for modulating the permeability of the blood brain  
 CC barrier. It is also useful for producing pharmaceutical compositions  
 CC which are useful for treating diseases and conditions associated with the  
 CC ion channel function or kinin activity. Antibodies generated using the  
 CC polypeptide are useful for detecting the presence of scorpion venom toxin  
 CC and in altering birtoxin family polypeptide-ion channel binding or kinin  
 CC activity. Antivenom comprising these antibodies is useful as an  
 CC insecticide or pesticide. The present sequence represents bestoxin of  
 CC Parabuthus transvaalicus, a polypeptide of the invention  
 XX  
 SQ Sequence 58 AA;

Query Match 66.0%; Score 226.5; DB 6; Length 58;  
 Best Local Similarity 66.1%; Pred. No. 5.3e-19;  
 Matches 37; Conservative 6; Mismatches 12; Indels 1; Gaps 1;

QY 1 ADVPGNYPLDSSDNTYLCAPLGDNPDCIKICQKHGVDYGYCYAFQCWC-EFLKDEN 55  
 ||||| ||| | ||:| || |:| ||| ||||| ||| |:| |:|  
 DB 1 ADVPGNYPLDKDGNNTYTCLELGENKDCQKVKCLHGVQYGYCYAFSCWCKEYLDKDK 56

## RESULT 3

ABR55369

ID ABR55369 standard; peptide; 58 AA.

XX

AC ABR55369;

XX

DT 29-JUL-2003 (first entry)

XX

DE Amino acid sequence of ikitoxin.

XX

KW Scorpion; birtoxin; venom; blood brain barrier; ion channel;  
 KW kinin receptor; insecticide; pesticide; ikitoxin.

XX

OS Parabuthus transvaalicus.

XX

PN WO2003028666-A2.

XX

PD 10-APR-2003.

XX

PF 04-OCT-2002; 2002WO-US031861.

XX

PR 04-OCT-2001; 2001US-0327602P.

PR

28-JUN-2002; 2002US-0393070P.

XX

PA (REGC ) UNIV CALIFORNIA.

XX

PI Hammock BD, Inceoglu B;  
 XX  
 DR WPI; 2003-441071/41.  
 XX  
 PT Novel scorpion birtoxin family polypeptide derived from venom of  
 PT Parabuthus transvaalicus, useful for producing a composition for treating  
 PT diseases or conditions associated with ion channel function or kinin  
 PT activity.  
 XX  
 PS Claim 6; Page 73; 104pp; English.  
 XX  
 CC The specification describes a scorpion birtoxin family polypeptide,  
 CC derived from the venom of Parabuthus transvaalicus, separated from its  
 CC natural milieu. The polypeptide is a modulator of the permeability of the  
 CC blood brain barrier. The polypeptide also has an an ion channel binding  
 CC activity of a birtoxin family polypeptide and kinin receptor activity.  
 CC The peptide is useful for modulating the permeability of the blood brain  
 CC barrier. It is also useful for producing pharmaceutical compositions  
 CC which are useful for treating diseases and conditions associated with the  
 CC ion channel function or kinin activity. Antibodies generated using the  
 CC polypeptide are useful for detecting the presence of scorpion venom toxin  
 CC and in altering birtoxin family polypeptide-ion channel binding or kinin  
 CC activity. Antivenom comprising these antibodies is useful as an  
 CC insecticide or pesticide. The present sequence represents ikitoxin of  
 CC Parabuthus transvaalicus, a polypeptide of the invention  
 XX  
 SQ Sequence 58 AA;

Query Match 65.3%; Score 224; DB 6; Length 58;  
 Best Local Similarity 63.0%; Pred. No. 1e-18;  
 Matches 34; Conservative 9; Mismatches 11; Indels 0; Gaps 0;

Qy 1 ADVPGNYPLDSSDNTYLCAPLGDNPDICIKICQKHGVDYGYCYAFQCWCEFLKDE 54  
 ||||| ||| | ||: |: |: || ||||| :|||:|:|:  
 Db 1 ADVPGNYPLDKDGNTYKCFLLGENEECLNVCKLHGVDYGYCYASKCWCEYLEDD 54

## RESULT 4

ABR55368

ID ABR55368 standard; peptide; 58 AA.

XX

AC ABR55368;

XX

DT 29-JUL-2003 (first entry)

XX

DE Amino acid sequence of birtoxin.

XX

KW Scorpion; birtoxin; venom; blood brain barrier; ion channel;

XX

KW kinin receptor; insecticide; pesticide.

XX

OS Parabuthus transvaalicus.

XX

PN WO2003028666-A2.

XX

PD 10-APR-2003.

XX

PF 04-OCT-2002; 2002WO-US031861.

XX

PR 04-OCT-2001; 2001US-0327602P.

XX

PR 28-JUN-2002; 2002US-0393070P.

XX

PA (REGC ) UNIV CALIFORNIA.

XX

PI Hammock BD, Inceoglu B;

XX

DR WPI; 2003-441071/41.

XX

PT Novel scorpion birtoxin family polypeptide derived from venom of  
 PT Parabuthus transvaalicus, useful for producing a composition for treating  
 PT diseases or conditions associated with ion channel function or kinin  
 PT activity.

XX

PS Claim 6; Page 71; 104pp; English.

XX

CC The specification describes a scorpion birtoxin family polypeptide,  
 CC derived from the venom of Parabuthus transvaalicus, separated from its

CC natural milieu. The polypeptide is a modulator of the permeability of the  
 CC blood brain barrier. The polypeptide also has an an ion channel binding  
 CC activity of a birtoxin family polypeptide and kinin receptor activity.  
 CC The peptide is useful for modulating the permeability of the blood brain  
 CC barrier. It is also useful for producing pharmaceutical compositions  
 CC which are useful for treating diseases and conditions associated with the  
 CC ion channel function or kinin activity. Antibodies generated using the  
 CC polypeptide are useful for detecting the presence of scorpion venom toxin  
 CC and in altering birtoxin family polypeptide-ion channel binding or kinin  
 CC activity. Antivenom comprising these antibodies is useful as an  
 CC insecticide or pesticide. The present sequence represents birtoxin of  
 CC Parabuthus transvaalicus, a polypeptide of the invention  
 XX  
 SQ Sequence 58 AA;

Query Match 64.4%; Score 221; DB 6; Length 58;  
 Best Local Similarity 63.0%; Pred. No. 2.3e-18;  
 Matches 34; Conservative 8; Mismatches 12; Indels 0; Gaps 0;

Qy 1 ADVPGNYPLDSSDNTYLCAPLGDNPDICIKQKHGVDYGYCYAFQCWCEFLKDE 54  
 ||||| ||| | | | :|: |: ||| ||||| :|||:|:|:  
 Db 1 ADVPGNYPLDKDGNTRYKCFLLGGNEECLNVCKLHGQYGYCYASKCWCEYLEDD 54

## RESULT 5

AAB20075

ID AAB20075 standard; protein; 89 AA.

XX

AC AAB20075;

XX

DT 11-SEP-2003 (revised)

DT 23-APR-2001 (first entry)

XX

DE Scorpion sodium channel agonist (insecticidal toxin).

XX

KW Scorpion; venom; toxin; sodium channel agonist; anticonvulsant;

KW nootropic; cerebroprotective; insecticide.

XX

OS Hottentotta judaica.

XX

FH Key Location/Qualifiers

FT Peptide 1. .21

FT /label= Sig\_peptide

FT Protein 22. .89

FT /label= Mature\_protein

XX

PN WO200078957-A2.

XX

PD 28-DEC-2000.

XX

PF 21-JUN-2000; 2000WO-US017048.

XX

PR 22-JUN-1999; 99US-0140410P.

XX

PA (DUPO ) DU PONT DE NEMOURS &amp; CO E I.

XX

PI Herrmann R, Lee J, Wong JF;

XX

DR WPI; 2001-050111/06.

DR N-PSDB; AAA89397.

XX

PT New isolated polynucleotide encoding a scorpion toxin for treating

PT epilepsy, degenerative disorders such as Huntington's disease, and

PT neuronal death following stroke, and for creating plants that are insect-

PT tolerant.

XX

PS Claim 10; Page 56-57; 60pp; English.

XX

CC The present sequence is that of a scorpion (Buthotus judaicus) venom

CC protein showing 29.7% identity to an insecticidal toxin of Orthochirus

CC scrobiculosus. The sequence was predicted from a cDNA clone (see

CC AAA89397) isolated from the scorpion telson cDNA library. The invention

CC provides isolated nucleic acid sequences (see AAA89386-400) encoding

CC scorpion toxins (see AAB20064-78) that are sodium channel modifiers. The

CC invention also relates to the construction of a chimeric gene encoding

CC all or part of the sodium channel modifier, in sense or antisense

CC orientation, where expression of the chimeric gene results in production  
 CC of altered levels of the sodium channel modifier in a transformed host  
 CC cell. Sodium channel modifiers can be used to treat neurological problems  
 CC involving abnormal functioning of excitatory amino acid synapses, e.g.  
 CC epilepsy, Huntington's disease and neuronal death following stroke.  
 CC Genetically engineered recombinant baculoviruses which express protein  
 CC toxins capable of incapacitating an insect host can be used as biological  
 CC insecticides. The nucleic acids can be used to create transgenic plants  
 CC in which sodium channel agonists of the invention are expressed for  
 CC improved insect tolerance. (Updated on 11-SEP-2003 to standardise OS  
 CC field)  
 XX  
 SQ Sequence 89 AA;

Query Match 48.0%; Score 164.5; DB 4; Length 89;  
 Best Local Similarity 45.6%; Pred. No. 1.7e-11;  
 Matches 26; Conservative 9; Mismatches 21; Indels 1; Gaps 1;

Qy 2 DVPGNYPLDSSDNTYLCAPLGDNPCIKICQKHGVDYGYCYAFQCWCEFLKDENVKV 58  
 | | | | | : : | | | : | | : | | | | | : | | | : | : :  
 Db 24 DTPGNYPISVYGTSGCTAFNHN-YCVDICKVHGVKYGVCWVTSCWCEYLKKEDIDI 79

## RESULT 6

AAB20077

ID AAB20077 standard; protein; 89 AA.

XX

AC AAB20077;

XX

DT 11-SEP-2003 (revised)

DT 23-APR-2001 (first entry)

XX

DE Scorpion sodium channel agonist (insecticidal toxin).

XX

KW Scorpion; venom; toxin; sodium channel agonist; anticonvulsant;

KW nootropic; cerebroprotective; insecticide.

XX

OS Hottentotta judaica.

XX

FH Key Location/Qualifiers

FT Peptide 1. .21

FT /label= Sig\_peptide

FT Protein 22. .89

FT /label= Mature\_protein

XX

PN W0200078957-A2.

XX

PD 28-DEC-2000.

XX

PF 21-JUN-2000; 2000WO-US017048.

XX

PR 22-JUN-1999; 99US-0140410P.

XX

PA (DUPO ) DU PONT DE NEMOURS &amp; CO E I.

XX

PI Herrmann R, Lee J, Wong JF;

XX

DR WPI; 2001-050111/06.

DR N-PSDB; AAA89399.

XX

PT New isolated polynucleotide encoding a scorpion toxin for treating  
 PT epilepsy, degenerative disorders such as Huntington's disease, and  
 PT neuronal death following stroke, and for creating plants that are insect-  
 PT tolerant.

XX

PS Claim 10; Page 57-58; 60pp; English.

XX

CC The present sequence is that of a scorpion (*Buthotus judaicus*) venom  
 CC protein showing 29.6% identity to an insecticidal toxin of *Orthochirus*  
 CC *scrobiculosus*. The sequence was predicted from a cDNA clone (see  
 CC AAA89399) isolated from the scorpion telson cDNA library. The invention  
 CC provides isolated nucleic acid sequences (see AAA89386-400) encoding  
 CC scorpion toxins (see AAB20064-78) that are sodium channel modifiers. The  
 CC invention also relates to the construction of a chimeric gene encoding  
 CC all or part of the sodium channel modifier, in sense or antisense  
 CC orientation, where expression of the chimeric gene results in production

CC of altered levels of the sodium channel modifier in a transformed host  
 CC cell. Sodium channel modifiers can be used to treat neurological problems  
 CC involving abnormal functioning of excitatory amino acid synapses, e.g.  
 CC epilepsy, Huntington's disease and neuronal death following stroke.  
 CC Genetically engineered recombinant baculoviruses which express protein  
 CC toxins capable of incapacitating an insect host can be used as biological  
 CC insecticides. The nucleic acids can be used to create transgenic plants  
 CC in which sodium channel agonists of the invention are expressed for  
 CC improved insect tolerance. (Updated on 11-SEP-2003 to standardise OS  
 CC field)  
 XX  
 SQ Sequence 89 AA;

Query Match 47.1%; Score 161.5; DB 4; Length 89;  
 Best Local Similarity 45.5%; Pred. No. 3.7e-11;  
 Matches 25; Conservative 11; Mismatches 18; Indels 1; Gaps 1;

Qy 4 PGNYPLDSSDNTYLCAPLGDNFDCIKICQKHGVDYGYCYAFQCWCEFLKDENVKV 58  
 |||||: :| | | : | ||: |||:||||: ||||:|:|: :  
 Db 26 PGNYPISYIGQSYGCTS-SDHDYCADICKVHGVNHYGYCWVTSCWCEYLKEEDINI 79

# RESULT 7

## AAB20076

ID AAB20076 standard; protein; 89 AA.  
 XX  
 AC AAB20076;  
 XX  
 DT 11-SEP-2003 (revised)  
 DT 23-APR-2001 (first entry)  
 XX  
 DE Scorpion sodium channel agonist (insecticidal toxin).  
 XX  
 KW Scorpion; venom; toxin; sodium channel agonist; anticonvulsant;  
 KW nootropic; cerebroprotective; insecticide.  
 XX  
 OS Hottentotta judaica.  
 XX  
 FH Key Location/Qualifiers  
 FT Peptide 1. .21  
 FT /label= Sig\_peptide  
 FT Protein 22. .89  
 FT /label= Mature\_protein  
 XX  
 PN WO200078957-A2.  
 XX  
 PD 28-DEC-2000.  
 XX  
 PF 21-JUN-2000; 2000WO-US017048.  
 XX  
 PR 22-JUN-1999; 99US-0140410P.  
 XX  
 PA (DUPO ) DU PONT DE NEMOURS & CO E I.  
 XX  
 PI Herrmann R, Lee J, Wong JF;  
 XX  
 DR WPI; 2001-050111/06.  
 DR N-PSDB; AAA89398.  
 XX  
 PT New isolated polynucleotide encoding a scorpion toxin for treating  
 PT epilepsy, degenerative disorders such as Huntington's disease, and  
 PT neuronal death following stroke, and for creating plants that are insect-  
 PT tolerant.  
 XX  
 PS Claim 10; Page 57; 60pp; English.  
 XX  
 CC The present sequence is that of a scorpion (*Buthotus judaicus*) venom  
 CC protein showing 29.6% identity to an insecticidal toxin of *Orthochirus*  
 CC *scrobiculosus*. The sequence was predicted from a cDNA clone (see  
 CC AAA89398) isolated from the scorpion telson cDNA library. The invention  
 CC provides isolated nucleic acid sequences (see AAA89386-400) encoding  
 CC scorpion toxins (see AAB20064-78) that are sodium channel modifiers. The  
 CC invention also relates to the construction of a chimeric gene encoding  
 CC all or part of the sodium channel modifier, in sense or antisense  
 CC orientation, where expression of the chimeric gene results in production  
 CC of altered levels of the sodium channel modifier in a transformed host



CC involving abnormal functioning of excitatory amino acid synapses, e.g.  
 CC epilepsy, Huntington's disease and neuronal death following stroke.  
 CC Genetically engineered recombinant baculoviruses which express protein  
 CC toxins capable of incapacitating an insect host can be used as biological  
 CC insecticides. The nucleic acids can be used to create transgenic plants  
 CC in which sodium channel agonists of the invention are expressed for  
 CC improved insect tolerance. (Updated on 11-SEP-2003 to standardise OS  
 CC field)

XX

SQ Sequence 89 AA;

Query Match 44.5%; Score 152.5; DB 4; Length 89;  
 Best Local Similarity 43.6%; Pred. No. 4.3e-10;  
 Matches 24; Conservative 11; Mismatches 19; Indels 1; Gaps 1;

Qy 4 PGNYP LDSSDNTYL CAP LGDNPDCIKICQKHGVDYGYCYAFQWC EFLKDENVKV 58  
 |||||: :| | : | ||: |||: ||||: ||||: ||: ||: :  
 Db 26 PGNYPIS IYGKSYGCTS-SYHDYCADICKVHGVNYGYCWVTSCWCEYLKEEDINI 79

<!--EndFragment-->